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IN SITU SPECTRORADIOMETRIC CALIBRATION

OF EREP IMAGERY

AND OCEANOGRAPHY OF BLOCK ISLAND SOUND

Monthly Progress Report - March 1974
Contract No. - NAS9-13308

EREP Investigation:	069/070	Technical Monitor:
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		NASA-Earth Observations Div.
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1. Introduction

This document constitutes the monthly progress report on "In Situ Spectroradiometric Calibration of EREP Imagery and Oceanography of Block Island Sound, Skylab EREP Investigation 069/070". This research is being conducted under National Aeronautics and Space Administration Contract No. NAS9-13308. The objectives of this investigation are:

(a) To relate radiometric spectra measurements to space-acquired imagery over test sites in Arizona under EREP Task Nos. 701224 and 701269.

(b) To determine the utility of sensor systems for oceanographic studies and the correlation of ground-truth acquired in Block Island Sound, New York, with the Skylab data collected under EREP Task Nos. 646609 and 646638.

2. Work Status

A quick-look preliminary analysis of SL-3 S190-A multi-spectral imagery was performed. The particular areas in the imagery included Block Island Sound and adjacent coastal waters.

Positives were made from NASA-supplied negative rolls. Black-and-white positive images were processed for the four bands (500-600 nm, 600-700 nm, 700-800 nm, and 800-900 nm)

for maximum water detail. The analysis was performed using a multispectral additive color viewer. The multispectral color composites were viewed by the oceanographers from the New York Ocean Science Laboratory, Montauk, New York. The imagery was taken by Skylab on 12 September 1973.

Three positives of each frame scene were placed in a Spectral Data Model 66 additive color viewer. Images in the 800-900 nm were not used as there were no density differences in the water area due to absorption of the infrared radiation which showed water areas as being completely dark on black-and-white photos. The three images on the viewer screen were projected as red, green, and blue and were optically superimposed on each other to form a multispectral color composite.

A preliminary visual examination revealed the following:

1. The circulation of the water mass in Long Island Sound can be seen using Skylab S190-A data.
2. In accordance with the ground truth collected on 12 September 1973, the test site area (namely, Block Island Sound) did not show any significant color differences. Such color differences do exist due to oceanographic occurrences such as planktonic blooms and unusual run-off conditions from rivers and streams. Similar persistent color

differences in these coastal areas have been shown by using ERTS imagery.

3. Interesting wave patterns in the water areas east of Block Island Sound are shown by S190-A data and are presently being investigated.

Further reprocessing of S190-A negatives is planned so as to bring out any subtle density difference in Block Island Sound photos. These photographic data products then will be analyzed using additive color viewing and electronic image analysis techniques.